

REMARKS

As indicated above, this Preliminary Amendment is submitted to amend Claims 1-8 and 58 and to cancel Claims 42-57 and 61-63. No new matter is added.

Attached is a marked-up version showing the amendments in a document entitled "VERSION WITH MARKINGS TO SHOW CHANGES MADE". If there are any questions, please telephone the undersigned at 408-451-5907 to expedite prosecution of this case.

Respectfully submitted,



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I hereby certify that this correspondence is being deposited with the United States Postal Service as FIRST CLASS MAIL in an envelope addressed to: Box Non-Fee Amendment, Assistant Commissioner for Patents, Washington, D.C., 20231, on August 19, 2002.

Date: 8/19/02 Signature: Robert A. Baumann

VERSION WITH MARKINGS TO SHOW CHANGES MADE: CLAIMS

Claim 1 is amended as follows:

1. (Amended) A method of correcting for proximity effects in a [proposed] layout [corresponding to a design layout for a printed features layer], the layout including a first layout for a trim mask and a second layout for a phase-shifting mask, the trim mask and the phase-shifting mask used to fabricate a wafer, the method comprising:

[selecting from among all edges of all polygons in the proposed layout a subset of edges for which proximity corrections are desirable, wherein the subset of edges includes less than said all edges;

establishing evaluation points only for the subset of edges; and

determining corrections for at least portions of the subset of edges based on an analysis performed at the evaluation points]

identifying edges of the first and second layouts that will print on the wafer;

evaluating the printing edges of the first and second layouts;

dissecting the printing edges of the first and second layouts to form a plurality of segments;

evaluating only a subset of the plurality of segments;

placing evaluation points on the subset of the plurality of segments; and

correcting only the subset of the plurality of segments.

Claim 2 is amended as follows:

2. (Amended) The method of claim 1 [said selecting] further comprising:

[determining if a correction for an edge among all edges was non-zero during a previous round of said determining corrections; and

if the correction was non-zero, then adding the edge to the subset of edges]

identifying a first edge of the first and second layouts that will partially print on the wafer;

adding at least one dissection point to the first edge to divide the first edge into a plurality of segments;

placing a first evaluation point on a first segment of the plurality of segments that will print; and

correcting the first segment for proximity effects using the first evaluation point.

Claim 3 is amended as follows:

3. (Amended) [The method of claim 1 said selecting] further comprising:

determining if a correction for a second edge within a halo distance of a first edge was non-zero during a previous round of said determining corrections; and

if the correction was non-zero, then adding the first edge to the subset of edges]

A method of correcting for proximity effects in a layout, the layout including a first layout for a trim mask and a second layout for a phase-shifting mask, the trim mask and the phase-shifting mask used to fabricate a wafer, the method comprising:

using dissection parameters to select dissection points on an edge of a polygon;

placing an evaluation point between each pair of successive dissection points on the edge; and

determining whether the edge is a last edge of the polygon,

wherein if the edge of the polygon is not a last edge, then determining whether all of the edge is printed on the wafer,

wherein if all the edge is printed, then analyzing the next edge on the polygon.

Claim 4 is amended as follows:

4. (Amended) The method of claim [1 said selecting further comprising:

determining if an edge corresponds to a critical feature in the proposed layout with a dimension close to a resolution of a fabrication process for the printed features layer; and

if the edge corresponds to a critical feature, then adding the edge to the subset of edges] 3, wherein if all the edge is not printed, then

adding at least one additional dissection point to the edge, thereby forming a plurality of segments; and

moving the evaluation point to an important segment of the plurality of segments.

Claim 5 is amended as follows:

5. (Amended) [A method of using a computer to correct a proposed layout for proximity effects, said layout corresponding to a design layout, the computer having a

processor coupled to a computer-readable medium, the computer-readable medium storing at least a portion of the design layout, the design layout corresponding to a portion of an integrated circuit, the method comprising:

selecting from among all edges of all polygons in the proposed layout a subset of edges for which proximity corrections are desirable, wherein the subset of edges includes less than said all edges; establishing evaluation points only for the subset of edges in the proposed layout; and determining corrections for at least portions of the subset of edges based on an analysis performed at the evaluation points] The method of claim 4, further including determining whether any segment of the next edge will print on the wafer, wherein if not, then returning to determining whether the edge is the last edge of the polygon.

Claim 6 is amended as follows:

6. (Amended) The method of claim 5 [said selecting further comprising:

determining if a correction for an edge among all edges was non-zero during a previous round of said determining corrections; and

if the correction was non-zero, then adding the edge to the subset of edges], wherein if any segment of the next edge will print on the wafer, then determining whether any segment in the edge has moved as a result of a last proximity correction.

Claim 7 is amended as follows:

7. (Amended) The method of claim [5 said selecting further comprising:

determining if a correction for a second edge within a halo distance of a first edge was non-zero during a previous round of said determining corrections; and

if the correction was non-zero, then adding the first edge to the subset of edges] 6, wherein if any segment has moved, then returning to using dissection parameters to select dissection points on the edge.

Claim 8 is amended as follows:

8. (Amended) The method of claim [5 said selecting further comprising:

determining if an edge corresponds to a critical feature in the proposed layout with a dimension close to a resolution of a fabrication process for the printed features layer; and

if the edge corresponds to a critical feature, then adding the edge to the subset of edges] 7, wherein if no segment has moved, then returning to determining whether the edge is the last edge of the polygon.

Cancel claims 42-57.

Claim 58 is amended as follows:

58. (Amended) A mask for fabricating a printed features layer, the mask including an opaque region having segments corrected for proximity effects, the segments corresponding to portions of [an] edges in a design layer for the printed features layer, wherein:

the segments are displaced from the corresponding portions in the design layer by correction distances;

the segments correspond to a subset of edges including [less than all] only printing edges in the design layer, wherein proximity corrections are determined to be desirable for the subset;

the correction distances are based on analysis of amplitudes output by a proximity effects model at evaluation points on the corresponding portions of only the subset of edges.

Cancel claims 61-63.